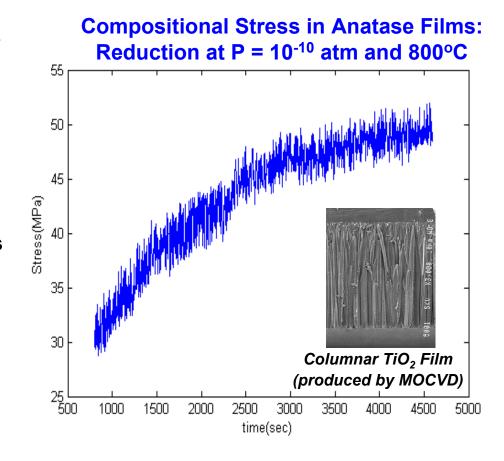
Controlling Stress Evolution in Ceramic Thin Films and Coatings

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- Compositional stresses occur in nonstoichiometric oxide films (i.e., where the lattice parameter varies with oxygen content, and the film is constrained by the underlying substrate).
- Time dependent stress evolution is monitored with a custom-built curvature system, permitting controlled atmosphere measurements at elevated temperatures.
- Diffusivities can be obtained from stress evolution (grain boundary diffusion is dominant for the case at the right).
- Materials of interest include TiO₂, YSZ, and doped CeO₂.
- Investigations include dopant effects, grain size effects, and stress effects on diffusion.



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